



## BRIEF

Debo s.r.l. is a Piedmonts located society that owns around 2.000 beef cattle. Composed of a farmer and an investor, in 2015 the society decided to build a biogas plant in order to:

- **Enhance** the farm by-products in an intelligent way;
- Produce a high-quality organic **fertilizer**;
- **Integrate the income** of the firm with the sale of the electrical energy.

## THE PLANT

Sebigas has built a biogas plant with a **feeding tank** and a **monodigester**. The plant is only fed with the company's **by-products**, which are slurry and cattle manure with straw. Plant choices have been implemented in order to **mazimize** operating hours, limiting plant downtime only for the ordinary maintainance of the cogenerator.

### CLIENT NAME

Debo s.r.l.

### LOCATION

Niella Tanaro (CN)

### FEEDING

Liquid and solid cow manure with straw

### INSTALLED POWER

300 kWe

## RESULTS

The feedind tank engineered by Sebigas is able to collect both solid and liquid materials, with a high **efficiency in the omogenization** of the incoming substrates. The monodigester is equipped with an efficient mixing system with balconies for the extraction of mixers during the operation of the plant; it's also equipped with a double membrane gasometer to ensure high reliability over time.

Maintenance costs are **reduced** to the replacement of the parts subject to wear.



## THE PLANT

The biomethane plant designed by Sebigas for Maserati Energia s.r.l. Is fed with organic fraction of municipal solid waste (**OFMSW**). It is structured to **optimize** the different treatment phases, minimizing wastes. The wet anaerobic digestion process consists of **5 reactors**, in details 1 feeding tank, 3 digestors and a post-digester.

In addition to the digestate treatment, an upgrading process allows the production of **biomethane**.

## RESULTS

The plant is built to treat up to **50.000** annual OMSWF **tons** and around **5.000** plant residues tons. The output coming from the different treatment phases have many uses: the digestate is reused as a **fertilizers** for the soil, and the purified liquid effluent is destined to river discharge, then released into the production cycle.

In addition, **biomethane** is used as a fuel for transportation.

## ADVANTAGES

Plant built for OFMSW treatment, such as Maserati's one, allow the **enhancement** of a great number of **citizens** – 600.000 in the surrounding area – and reduce the necessity of waste **transport** itself. Environmental benefits and the energetic production are a concrete example of what circular economy means.

### CLIENT NAME

Maserati Energia srl

### LOCATION

Sarmato (Piacenza)

### FEEDING

OFMSW

### INSTALLED POWER

1056 Sm<sup>3</sup>/h

### BIOGAS PRODUCTION

1000 Nm<sup>3</sup>/h



## THE PLANT

Nivelles is a **single-stage** anaerobic digestion plant, designed for the optimization of spaces. The loading line is suitable for biomass containing straw and it is structured to receive **heterogeneous by-products**.

The flexibility of the mixing system and external maintenance allow the minimization of downtime **maximizing** the number of operation hours.

## RESULTS

The plant is fed with equine manure, slurry and cattle manure, pig slurry, fruit and vegetable waste and second harvest crops. In this way, the weight of inputs in the operational costs are reduced and allows flexibility in the supply chain.

The plant designed by Sebigas, allows EBE to enhance the importance of biogas through **cogeneration** and to return to local farmers a quality digestate as a **soil improver**.

### CLIENT NAME

Evergreen Bio Energy SA

### LOCATION

Nivelles (Belgio)

### FEEDING

Slurry and manure, agriculture by-products and corn

### INSTALLED POWER

600 kWe



## BRIEF

The Eridania Sadam Group is one of the key actors of the Italian **agro-industrial** market and it is present in all the sugar supply chain – production, distribution and infrastructures, sale – through governance strategies well-structured and articulate, with an activity in international sugar trading, result of the expertise of the Group acquired at global level.

## SOLUTION

The biogas plant allows to enhance the **by-products** generally unused in the sugar processing, such as sugar beet collars, leaves and pulp.

## CLIENT NAME

Eridania Sadam spa

## LOCATION

San quirico (PR)

## FEEDING:

Sugar beet pulp, leaves and collars

## INSTALLED POWER

Electrical energy: 999 kWe  
Thermal energy: 999 kWth

## RESULTS

The electrical energy produced is given to the **national grid**, while the thermal energy **recovered** is used in the **sugar factory** to perform its activities.

Moreover, the system allows the reduction of **fertilizer** costs thanks to the usage on fields of the digestate.



## BRIEF

The vinasse is the main residue of the production of ethanol and sugar from the sugarcane. It shows a high content of organic material and salts and acid pH. Considering the remarkable quantities daily produced, these characteristics are high environmental impact for the soil, the aquifer, the greenhouse gases emission and the increase of horsefly proliferation.

In fact, the usual practice foresees to dispose it on the sugarcane plantations changing the soil composition and causing serious damages to the aquifer and adjacent farms.

## SOLUTION

SEBIGAS developed a customized plant that allows to convert the organic substance present in the vinasse into **biogas**, thus generating renewable **energy** and **bettering the characteristics of the exiting effluent**.

The solution involves the usage of a large covered **lagoon**, with an injection and mixing system and effluent recirculation that allow the control of the key parameters of the anaerobic digestion and guarantee the achievement of a high conversion efficiency of the organic matter.

## RESULTS

### FEEDING

MILL CAPACITY: 4,000,000 t/y of sugarcane

VINASSE: 10,000 m<sup>3</sup>/day

### PRODUCTION

EFFLUENT COD : 25,000 mg/l

CHP: Electrical energy: 10 Mwe

Biomethane: 59,000 Sm<sup>3</sup>/day

- Biogas production that can be used to produce **electrical energy and/or biomethane**.
- COD reduction, pH stabilisation, NPK concentration in the vinasse exiting from the anaerobic digestion.



## THE PLANT

Xalastra is an anaerobic digestion plant located in Salonicco (Greece) built in 2017. It consists of **two digestors** and structured in order to process heterogeneous and complex biomasses. The plant has a pre-treatment phase of by-products consisting of a **sanitization** and **pasteurization** system. At the end, digestate undergoes on a specific **water treatment**.

## RESULTS

The plant processes **148 tons of by-products** daily, divided into cattle manure, slaughter waste, expired food, beer residues and whey. The plant has an installation **power** of 1 Mwe and produces 450-500 Nm<sup>3</sup>/h of **biogas**.

## ADVANTAGES

The biogas plant allows processing industries, such as Xalastra, to **valorize waste** by producing electricity, that is reused in their production cycle. At the same time, it let them **remove costs** given by the disposal of waste.

As a further element supporting the role of biogas achieving a circular economy, the **reuse of digestate** as a fertilizer and soil improver in the surrounding areas.

## CLIENT NAME

Xalastra

## LOCATION

Salonicco (Greece)

## FEEDING

Cattle manure, slaughter waste, expired food, beer residues, whey

## INSTALLED POWER

1 MWe